

-For high stable speed demand

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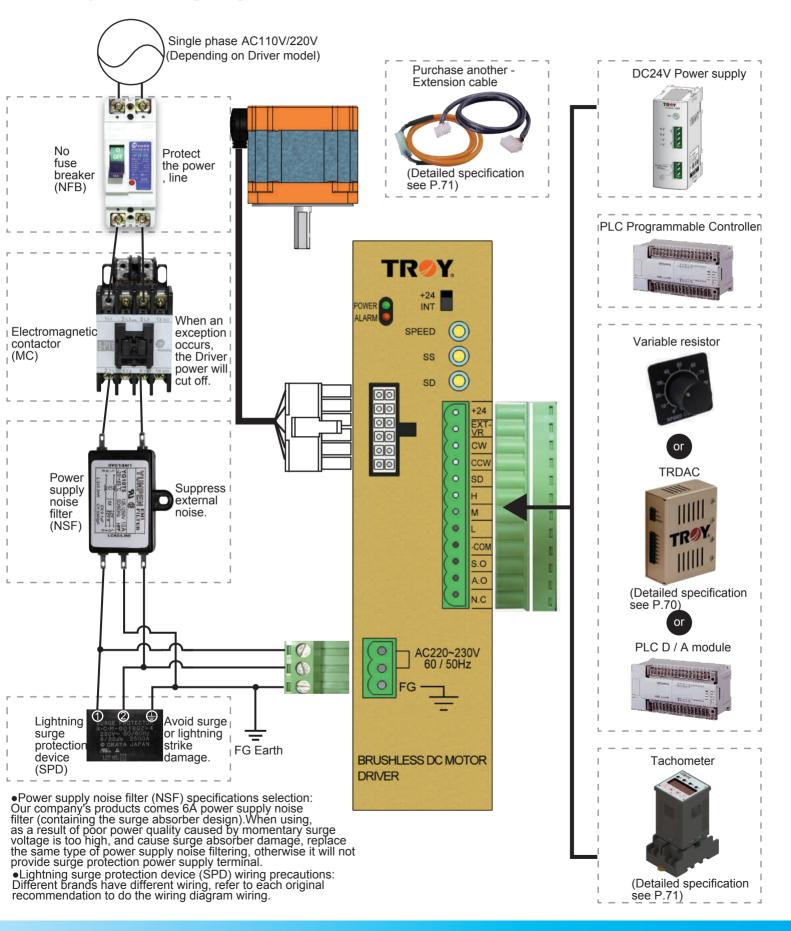
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DC brushless Motor- BS series

System wiring diagrams





■ Specifications and characteristics of Motor/Driver

Mo	otor c	utput pov	ver	20W	40W	75W	120W	200W			
		haft Motor (M naft Motor (M:	M: E/M brake type) E/M brake type)	6B020S-□(M) (Note1) 6B020P-□(M)	6B040S-□(M) 6B040P-□(M)	9B075S-□(M) 9B075PD-□(M)	9B120S-□(M) 9B120PD-□(M)	9B200S-□(M) 9B200P-□(M)			
Mo	tor sp	ecification	-1 Type		ÇA _{us} RoHS ⊕ IP54						
cer	tificate	es	-2 Type	C€ (((C) RoHS)⊕ IP54							
Dri	ver			DB020-□	DB040-□	DB075-□	DB120-□	DB200-□			
Dri	ver sp	ecification of	certificates		, and the second	CE (A) RoH	s e				
⊒			Max. Current (A)	2.8	2.8	2.8	3.3	4.9			
AC110~		Rated Current (A)	0.65	1.2	1.95	2.7	4				
wer v			Max. Current (A)	1.6	1.6	1.6	1.75	2.8			
Input power voltage	AC220 50/60	0~230V HZ	Rated Current (A)	0.35	0.65	1.05	1.45	2.3			
	arting T	Torque (Nm)		0.08	0.16	0.33	0.5	1			
Ra	ted To	rque (Nm)		0.065	0.14	0.25	0.4	0.8			
		load inertia	GD ² (Kgcm ²)	4.78	9.55	17.45	23.99	112.81			
	» «	Input line vo	oltage(V)	DC	24	DO	24	DC24			
Ш)nly erie	Consumption	on power(W)	6	.5	7	.5	7.5			
≤ B	E/M s ha	Maintenanc	e(Nm)	0	.3	0	.5	0.5			
E/M Brake	* Only E/M brake series have E/N	Attraction tir	, ,	3	30	3	33				
Release time(ms)			ie(ms)	8	37	9	95	95			
Sp	eed co	ntrol range(r/	min)		300~	-3000		250~2500			
		riation rate	To load To voltage To Temperature time set up	±0.05% Volt ±0.05% 0-+4 20~120W:0.5~15	age variation ±15% 40°C at 3000r/min(sec, Motor from 0~	6, at 3000r/min(20 (200/400W: at 250 (3000r/min or from	0~3000r/min	nin), no load.			
		ntrol method	<u> </u>	200W:0.8~15sec, Motor from 0~2500r/min or from 0~2500r/min •Control from external variable resistor (resistance 20ΚΩ) •Control from internal variable resistor (resistance 20ΚΩ) •Control from internal variable resistor (resistance 20ΚΩ) •Control from external DC voltage (DC0~5V/1 mA above) •Work with D/A speed setter TRDAC (Option)							
Sig	nal inp	ut/output me	thods	●Photo coupler input interface ●Transistor Open Collector output interface							
Fui	nction			 Zero point control, can connect to PLC or Transistor, Relay type I/O module Within speed control range, Motor sets Flat Torque output Instant brake stop, Slow up/Slow down Can operate in parallel 120W/200W have regenerative resistor connection terminals, can based on customers' load condition to select external resettable resistors to consume regenerated energy (regenerated energy absorption protection: start operation at up down, Coiling or inertial load operation) 							
Protection function				When protection functions activate, Motors stop automatically, Driver alarm signals output Overload protection: starts when Motor activate torque for more than 5 sec Over heat protection: starts when Driver internal heat sink over 80°C Over voltage protection: (1) starts when up down, coiling or over inertial load (2) starts when Driver input AC voltage appears transient high voltage Transient over current protection: When driver AC input power connects in parallel with large power for Power on, easy activates by large transient current Lack of phase protection: starts when Motor power cable has bad connection, broken cable or feedback signal suffers interference							
Ins	ulation	impedance		Applies DC500V high	resistance meter test	power, F.G grounding	ı, I/O terminal resistano	ce value is over 100M			
Ins	ulation	high voltage		Power and F.G connect to ground, terminals pass with 1.8KV/60Hz high voltage, power and I/O connectors pass with 3KV/60Hz high voltage for 1 minute, no abnormal condition							
Am	bient t	emperature/l	Humidity range	0~+40°C, under 85°	% relative humidity (a	void dust and erosio	n, combustion gas)				
Not	e1 : Pl	ease fill the r	power in the bo	x-□, ଘ indicates A	C110V~115V . 🗵 ii	ndicates AC220V~	230V. <u>※ 1 Nm</u> =	=10.19716Kgcm			



■ Gearhead specifications & allowable speed range/allowable torque/allowable inertia load (GD²)

Gea	r ratio	3	3.6	5	6	7.5	9	10	12.5	15	18	20	25	30
Speed range	High speed	1000	883	600	500	400	333	300	240	200	166	150	120	100
(r/min)	Low speed	100	83.4	60	50	40	33.4	30	24	20	16.7	15	12	10
Allowable torque (Nm)	6B020P-□(M) +6D□	0.18	0.21	0.29	0.35	0.44	0.53	0.59	0.73	0.88	1.1	1.2	1.4	1.7
Allowable inertia	a load GD ² (kgcm ²)	2.25	3.24	6.25	9.00	14.1	20.3	25.0	39.1	56.3	81.0	100	156	225
Allowable torque (Nm)	6B040P-□(M) +6D□	0.35	0.42	0.59	0.7	0.88	1.1	1.2	1.5	1.8	2.1	2.3	2.8	3.4
Allowable inertia	a load GD2 (kgcm2)	4.50	6.48	12.5	18.0	28.1	40.5	50.0	78.1	113	162	200	313	450
Allowable torque (Nm)	9B075PD-□(M) +9D □	0.68	0.81	1.1	1.4	1.7	2	2.3	2.8	3.4	4.1	4.5	5.4	6.5
Allowable inertia	a load GD ² (kgcm ²)	27.9	40.2	77.6	112	175	251	310	485	698	1005	1241	1939	2792
Allowable torque (Nm)	9B120PD-□(M) +9D □	1.1	1.3	1.8	2.2	2.7	3.2	3.6	4.5	5.4	6.5	7.2	8.6	10.3
Allowable inertia	a load GD ² (kgcm ²)	38.4	55.3	107	154	240	345	426	666	960	1382	1706	2666	3838
	High speed	833	694	500	416	333	277	250	200	166	138	125	100	83
Speed range (r/min)	Low speed	83.4	69.5	50	41.7	33.4	27.8	25	20	16.7	13.9	12.5	10	8.4
Allowable torque (Nm)	9B200P-□(M) +9D□H	2.2	2.6	3.6	4.3	5.4	6.5	7.2	9	10.8	13	14.4	17.2	20.6
	a load GD² (kgcm²)	181	260	501	722	1128	1624	2006	3134	4512	6498	8022	12534	18050
	(··g-···)													
												I		
Gea	r ratio	36	50	60	75	90	100	120	150	180	200	250	300	360
Speed range	High speed	83	60	50	40	33	30	25	20	16	15	12	10	8
(r/min)	Low speed	8.4	6	5	4	3.4	3	2.5	2	1.7	1.5	1.2	1	0.9
Allowable torque (Nm)	6B020P-□(M) +6D□	2	2.8	3.4	4.2	5	5.6	6.3				.5		
Allowable inertia	a load GD ² (kgcm ²)	324			625						625			
Allowable torque (Nm)	6B040P-□(M) +6D□	4	5.6		6	.5					6.5			
Allowable inertia	a load GD ² (kgcm ²)			62	25						625			
Allowable torque (Nm)	9B075PD-□(M) +9D □	7.7	10.8	12.9	16.1	19.4	21.5	24.3	30.4	36.5		4	0	
Allowable inertia	a load GD ² (kgcm ²)	4020	7756		110	00					11000			
Allowable torque (Nm)	9B120PD-□(M) +9D □	12.4	17.2	20.6	25.8	31	34.4	38.9			40			
Allowable inertia	a load GD ² (kgcm ²)	5527	10662		110	000					11000			
Speed range	High speed	69	50	41	33	27	25	20	16	13	12	10	8	6
(r/min)	Low speed	7	5	4.2	3.4	2.8	2.5	2.1	1,7	1.4	1.3	1	0.8	0.7
Allowable torque (Nm)	9B200P-□(M) +9D□H	24.8	34.4	41.3		50					50			
Allowable inertia	a load GD ² (kgcm ²)	25991			45000						45000			

^{*} Gearhead 6D \square /9D \square /9D \square H, please fill gear ratio in \square .

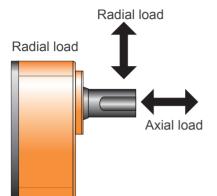
^{*} In above table stands for after installation of Gearhead, the axis rotation direction is reversed with Motor axis direction; without marking stands for the same direction as Motor axis rotation.

^{* 1}Nm = 10.197Kgcm.

^{*}The Gearheads of all series have ROHS @ certificate.

^{*} Also available orthogonal Gearhead: hollow shaft type $9VD\Box(H)$, the solid single shaft type $9VD\Box A(H)$, the solid biaxial shaft type $9VD\Box B(H)$, and size please refer to P.10.

■ Motor allowable radial load/axial load



- (1) Radial load (hanging load): loading is vertical to Gearhead axis power output
- (2) Axial load (thrust load): loading is in the direction of Gearhead axis power output

◆ Round shaft type

	Permissible overhunç	Permissible thrust load		
Model	10mm from output shaft front	20mm from output shaft front	(Unit: Kg f)	
6B020S-□(M) 6B040S-□(M) 9B075S-□(M) 9B120S-□(M) 9B200S-□(M)	8 8 13 16 16	9 9 15 17 17	Permissible axial loading, not more than 1/2 of motor weight. But please try to avoid applying force in the horizontal direction (axial) of motor shaft, when exceeds that will reduce motor service life. If axial loading is needed, we recommend applying indirect transmission, such as: couplings, belts, chains, etc	

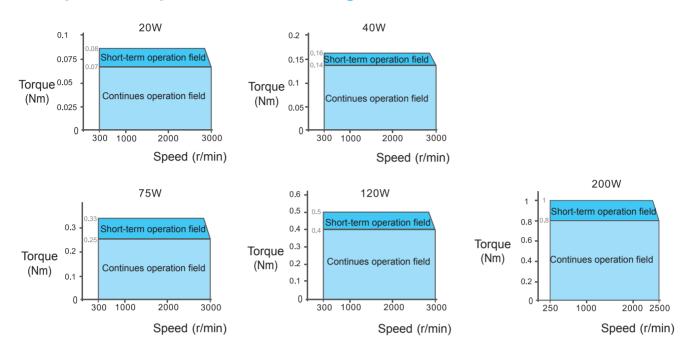
◆ Pinion shaft type (Gearhead attached)

		Permissible overhur	ng load (Unit: Kg f)	Permissible thrust load (Unit: Kg f)	
Model	Gear ratio	10mm from output shaft front	20mm from output shaft front		
6B020P-□(M)	3, 3.6, 5	10	15		
+ 6D□ 6B040P-□(M)	6, 7.5, 9, 10, 12.5, 15,18, 20	15	20	4	
+ 6D□	25, 30, 36, 50, 60, 75,90,100,120, 150, 180,200, 250, 300, 360	20	30		
9B075PD-□(M)	3, 3.6, 5	30	40		
+ 9D□ 9B120PD-□(M)	6, 7.5, 9, 10, 12.5, 15,18, 20	40	50	15	
+ 9D□	25, 30, 36, 50, 60, 75,90,100,120, 150, 180,200, 250, 300, 360	50	65		
	3, 3.6, 5	30	40		
9B200P-□(M) + 9D□H	6, 7.5, 9, 10, 12.5, 15,18, 20	40	50	15	
	25, 30, 36, 50, 60, 75,90,100,120, 150, 180,200, 250, 300, 360	50	65		

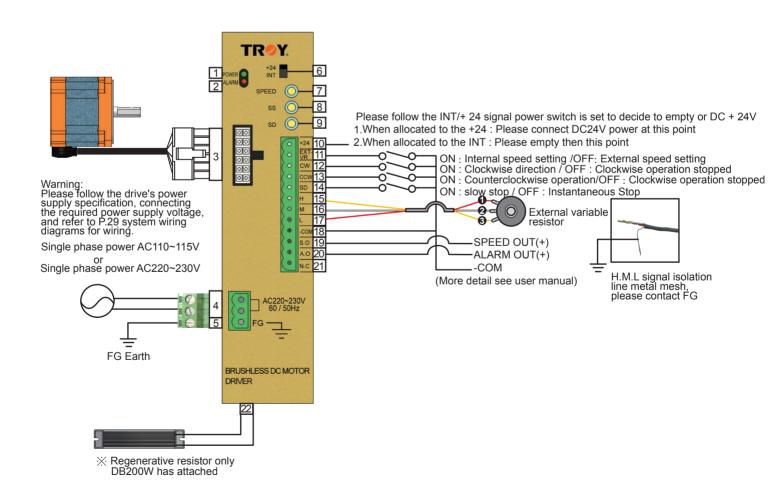
^{*} Motor 6B020S- \square (M)...etc, please fill in \square with line power voltage. \square : stand for single phase AC110~115V, ②: stand for single phase AC220~230V. *Gearhead 6D□/9D□/9D□H, please fill gear ratio in □.



■ Speed - Torque characteristic diagrams



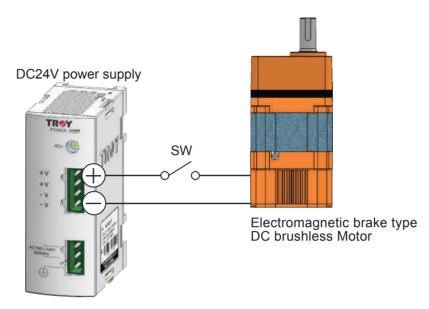
Driver panel functions and wiring instructions



Number	Panel marked	Function	Explanation
1	POWER	Power indicator	When input power LED (green) lights
2	ALARM	Unusual indicator	Overload, overheating, overvoltage, instantaneous overcurrent, under equal any protective function will activate LED (red) lights
3	MOTOR	Motor wiring connector	Motor and Driver connection
4	AC110~115V or 220~230V 60/50Hz	Power voltage input terminal	AC power voltage input connection
5	FG	Power ground terminal	Power ground connecting
6	+24/INT	Signal power switch	+24: When using an external power DC24V control (PLC control applicable to the case) INT: Using Driver internal DC24V power control (for relays, switches and control applications)
7	SPEED	Internal speed setting button	20~120W speed control range : 300~3000r/min 200W speed control range : 250~2500r/min
8	SS	Slow start time setting button	20~120W: 0.5~15sec 200W: 0.8~15sec
9	SD	Slow stop time setting button	20~120W: 0.5~15sec 200W: 0.8~15sec
10	+24	Signal input power DC24V	When an external DC24V power control, external DC24V power connects to the terminal
11	EXT-VR	Speed setting switch to select the input mode	External/Internal speed setting mode switch selection
12	CW	Clockwise operation input	Clockwise operation/stop switch input
13	CCW	Counterclockwise operation input	Counterclockwise operation/stop switch input
14	SD	Slow stop time setting button	Slow (depending on SD button to set the time for the slow stopped)/instantaneous stop mode select switch
15	Н		An external connection terminal variable resistor or external DC voltage (0 ~ 5V) control of
16	M	External speed setting input	20~120W speed control range : 300~3000r/min
17	L		200W speed control range : 250~2500r/min
18	-COM	Control signal grounding	GND contact inputs and outputs a control signal common ground line, and the external power DC24V
19	S.O.	Speed signal output	Detecting Motor speed using : 20 ~ 120W digital signal output 12 Pulse/rev 200W digital signal output 24 Pulse/rev
20	A.O.	Abnormal warning signal output	Overload, overheating, overvoltage, overcurrent moment, when any one of the less equal protection function is activated, Motor will stop naturally, and outputs an abnormality warning signal
21	N.C.	No connection	Do not make any connection
22	RG	None Regenerative resistor connection terminal	20/40/75W: No this connection terminal 120/200W: According to customer load conditions selected external regenerative resistance, regenerative energy consumption



■ Motor electromagnetic brake wiring instructions



Operation instruction

Motor start/Motor stop with external electromagnetic brake operating procedures: Motor start: Must energize external electromagnetic brake before the Motor starts

External electromagnetic brake power ON
Attracting waiting time (This is the time of the external electromagnetic brake actuation, the purpose: to keep the force is released)
Motor Driver starting signal ON
Motor starts running
The Motor is stopped before the operation do not yet fully external electromagnetic brake power.
Motor Driver stop signal ON
Wait 0.2sec (reference value, this is the operation of the Motor to a complete stop time)
External electromagnetic brake power is turned OFF
Waiting for the release time (This is the external electromagnetic brake actuation time, purpose: To generate holding force)
Waiting for the release time (This is the external electromagnetic brake actuation time, purpose: To generate holding force)

Precautions

- 1. This series of external electromagnetic brake using the brake power is part of the hold-type.
- 2.External electromagnetic brake is designed to allow the Motor stops when the holding force
- has to be used as a safety brake, electromagnetic brake, do not use this as a Motor positioning or emergency brake applications.

 3. Always to pull the Motor before starting the external electromagnetic brake energized (means no brakes); Motor stopped before the operation do not yet fully external electromagnetic brake power (expressed brakes).
- 4.External electromagnetic brake suction time and release time value refer to the product specification. 5.Motor brakes to stop for about 0.2sec (test conditions in the Motor no-load speed 3000r / min, the electromagnetic brake is energized, the brake actuator signal ON time of the Driver, this time as a reference base, but the actual length of time will stop according to the inertia load or frictional load ... different load patterns and has fluctuated.
- 6.We recommend to do the actual measuring device operating time at the time of commissioning.

Weight: 1440g+W

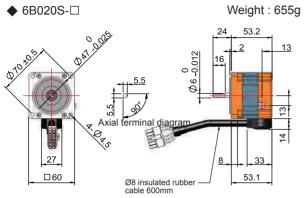
Dimensions - Motor/Gearhead

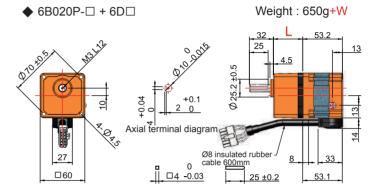
Round shaft type

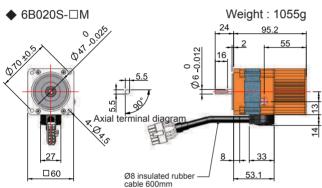
Pinion shaft type

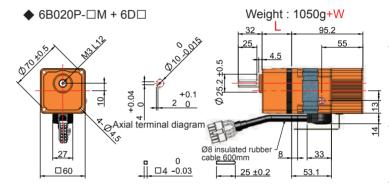
Unit: mm

20W/□60mm

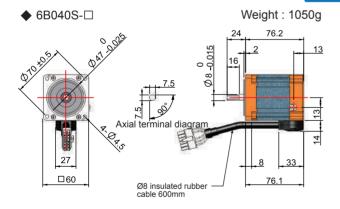


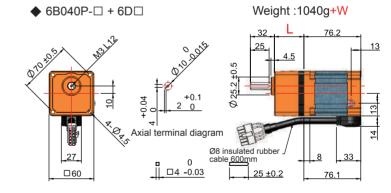




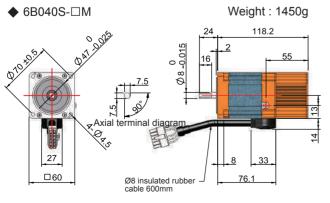


40W/□60mm





6B040P-□M + 6D□



(+0.1 Axial terminal diagram Ø8 insulated rubber □4 -0.03

* Figure above dimensions tolerance values are not labeled a general machining tolerances, the control mode, refer to P.12, others have marked tolerance values according to the drawing labeled based.

★ 6B pinion shaft type 6D3-6D360, Gearhead length L and weight W specification as following:

	Model	6D3~6D20	6D25~6D100	6D120~6D360		
	Length L (mm)	39.5	39.5	43.5		
	Weight W (g)	300	325	365		



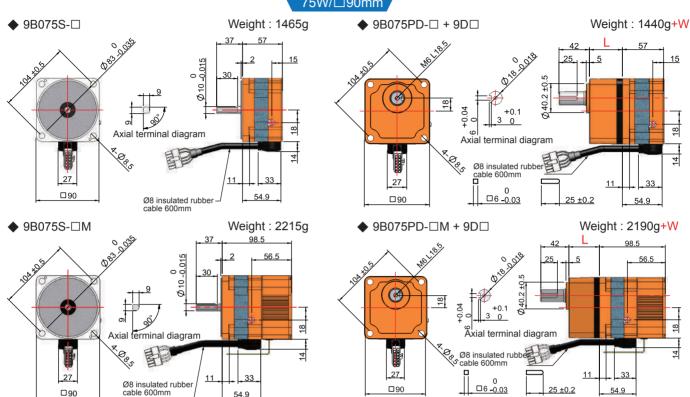
Round shaft type

■ Dimensions - Motor/Gearhead

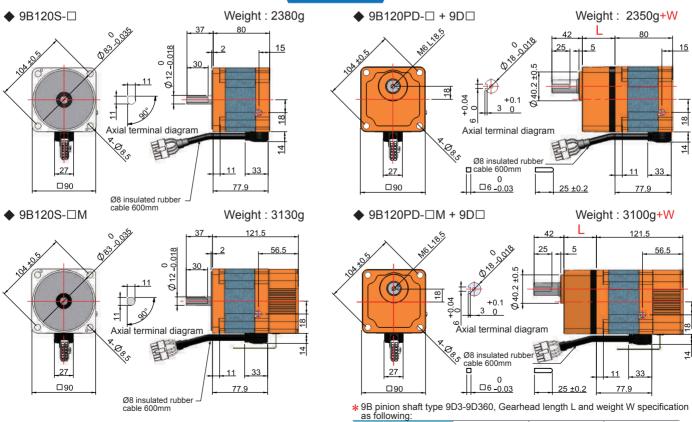
Pinion shaft type

Unit: mm

75W/□90mm



120W/□90mm



* Figure above dimensions tolerance values are not labeled a general machining tolerances, the control mode, refer to P.12, others have marked tolerance values according to the drawing labeled based.

	Model	9D3~9D20	9D25~9D100	9D120~9D360	
Gearhead	Length L (mm)	45.5	58.5	64.5	
	Weight W (g)	860	1125	1265	

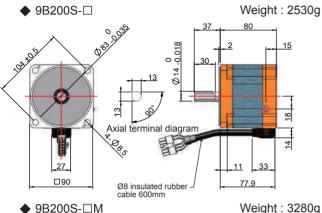
Unit: mm

Dimensions - Motor/Gearhead

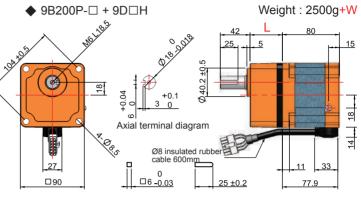
Round shaft type

Pinion shaft type

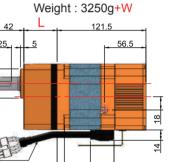
200W/□90mm



Weight: 3280g



9B200P-□M + 9D□H



Weight: 660g

Weight: 670g

Weight: 680g

* 9B pinion shaft type 9D3H-9D360H, Gearhead length L and weight W specification as following:

് ര| Axial terminal diagram

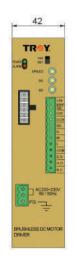
Ø8 insulated rubbe 0 □6 <u>-0.03</u>

	Gearhead	Model	9D3H~9D20H	9D120H~9D360H		
		Length L (mm)	45.5	58.5	64.5	
		Weight W (g)	860	1125	1265	

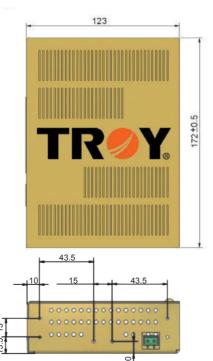
Dimensions - Driver

Axial terminal diagram

Ø8 insulated rubbe cable 600mm



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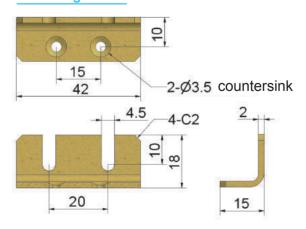


Mounting sheet

Model: DB020-□ / DB040-□

DB120-□ / DB200-□ Dimensions are common

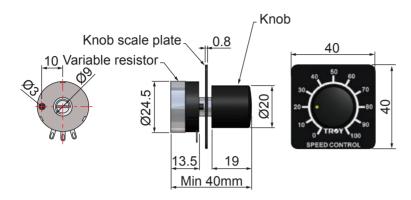
DB075-□



* Figure above dimensions tolerance values are not labeled a general machining tolerances, the control mode, refer to P.12, others have marked tolerance values according to the drawing labeled based.



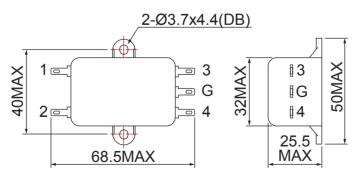
■ Dimensions - Variable resistor



■ Dimensions - Regenerative resistance dimensions (Only 150 / 200W attached)

Two insulated wires, 16AWG long 300mm 7.5 175 20 150 20 190

■ Dimensions - Power supply noise filter



* Figure above dimensions tolerance values are not label on general maching tolerances, the control mode refer to P.12, others have marked tolerance values according to the drawing labeled based.

Weight: 260g

Weight: 50g

Weight: 30g

Unit: mm

■ Machanism: 【Opera	iting of larg	je index tab	ole]		Date dd / mm / yy			
Company name:	Co	ntact persor	1:		Departr	ment/Ti	ent/Title:	
TEL:	FAX:		Application	:		Use a	rea:	
Power input: □Single -ph	nase AC:	_V □Three	-phase AC:	V	□DC:	V	Frequency:	Hz
□Single stop t □Clock Stop:	llated speed e direction retime: Sec wise/counte	(Range: un \ stop \ ru cond/Sequen er clockwise (Sequence \	rpm ~ rpr	m) (Activation total (CW:	ated tim Sequ Seco	e: S uence / ond/Sec		ence,
□DBS \$	e shless motor Series	∵ □BMS Ser		ries [lMagnetic bra ⊐UBS Series	
[Mechanism reference]			se sketch yo of mechanisr		ual trans	smissic	on	
Object W	LT							
Drive mechanism and	operating da	ıta]						
Object r	nass		W	=	kg			
Index ta	ble diamete	r	Dт	=	cm			
Width			Lт	=	cm			
Materia			ρ	=				
Position	ing angle	*(note)	θ	=	deg			
Position	ning time	*(note)	То	=	sec			
Stoppin	g accuracy			±	mm			
*(note)F	lease enter	the max spe	ed					
Recommendation produc	ts (Selecte	d specs) :						

After complete above information, please fax it to nearby regional business office, we will select

applicable product for you as soon as possible

■ Machanism: 【Le	ad screw]		Date dd / mm / yy					
Company name:		Contact person:	D	epartment/Tit	tle:			
TEL:	FAX:		Application:	Use ar	rea:			
Power input: □Single	-phase AC:	V □Three	-phase AC:V	□DC: <u>V</u>	Frequency:	Hz		
□9 s □0 9	Regulated sp lingle direction top time: Blockwise/co litop: Seco	eed (Range: on run \ stop \ ru Second/Sequen unter clockwise	•	ated time: \$ Sequence Second/Se	/Minutes)	ence,		
DC □D	orque brushless m BS Series	otor: □BMS Ser	□Reversible □Sp ies □BS Series □ ohase □5 phase		•			
Mechanism referer W DB PB	Object Level	W a	【Please sketch y part of mechani		ansmission			
Work+Table mass Screw angle Screw shaft diame Screw Length Screw pitch Material Screw efficiency Internal frictional of	eter	W =	Positioning dista Positioning time Push / Pull force Stopping accura	nce *(note) *(note) cy	FA =k ±n	sec (g		
pilot pressure nut			*(note)Please er	nter the max s	speed			

 $\label{lem:commendation} \textbf{Recommendation products} \ (\, \textbf{Selected specs} \,) \ :$

^{*} After complete above information, please fax it to nearby regional business office, we will select applicable product for you as soon as possible

■ Machanism:	y	Date				Date dd/n	nm .	<i>I</i> уу			
Company name:			Contact _I	person	n: Department/Title:			tle:			
TEL:		FAX:			Application:			Use a	rea:		
Power input: □S	ingle -ph	nase AC:	V 🗆	Three	-phase AC:	V	□DC:	_ <u>V</u>	Frequenc	y:	Hz
Activated mode:	□Regui □Singli stop	llated spe e directio time: \$ kwise/cou : Seco	eed (Ran n run · s Second/S inter cloc	ge: top \ ru Sequen kwise ence \	ntinuously → rpm ~rpr un · stop → (ce; Run, stop repeated → (CCW:Se	m) (Activ o total (CW:	ated tin Seq Sec	ne: uence ond/Se	/Minutes)	equ€	ence
Required motor:	□Torque DC brus □DBS \$	e shless mo Series	otor: □BN	MS Ser	□Reversible ries □BS Se phase □5 ph	ries [
(Mechanism ref	Object W	Belt W evel	Motor	_	ase sketch yet of mechanis		ctual tra	ansmis	sion		
[Drive mechanis	sm and	operating	data]								
Work + Table - Screw angle Pulley diamete Width Material Pulley diamete	er	$\alpha = $	deg cm cm	friction Position Position Push	pulley efficient nal coefficient oning distance oning time *(r / Pull force ing accuracy	t of sl e *(no	Ū	ırfaces	η = μ = L = Το= FA=	cn se kg	ec J
Width		L _P 2 =	cm		•						

$\label{lem:Recommendation products} \mbox{ (Selected specs) } \mbox{ : }$

Material

*(note)Please enter the max speed

^{**} After complete above information, please fax it to nearby regional business office, we will select applicable product for you as soon as possible

■ Machanism:	[Others]				Date dd/mm/yy
Company name:		Contact person:		Departmen	t/Title:
	FAX:		Application:	Us	e area:
Power input: □S	ingle -phase AC	:V □Three	-phase AC:V	□DC: _	
Activated mode:	☐Regulated sp☐Single direct stop time: ☐Clockwise/cc Stop:Sec	ion operating con beed (Range: ion run \ stop \ ru Second/Sequen bunter clockwise i cond/Sequence \ quence/Minute)	rpm ~rpm) in · stop → (Acti ce; Run, stop tota repeated → (CW	ivated time: alSequer /:Second	I/Sequence \$
Required motor:	□Torque DC brushless n □DBS Series		ies □BS Series	□SBS Seri	ol □Magnetic brake es □UBS Series
	•	ng data】:Use thating conditions r	•	o draw the c	outline of your drive

Recommendation products (Selected specs):

^{*} After complete above information, please fax it to nearby regional business office, we will select applicable product for you as soon as possible